

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

MURALIDHARA et al.

Serial No.: 09/909,488

Filed: July 20, 2001

For: NANOFILTRATION WATER-
SOFTENING APPARATUS AND
METHOD

)
) **Group Art Unit:** 1723

)
) **Examiner:** Fortuna, Ana M.

**DECLARATION OF PRIOR INVENTION IN
THE UNITED STATES (37 C.F.R. 1.131)**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I declare:

1. This declaration is to establish the completion of the invention of this application in the United States at a date prior July 7, 2000, which is prior to the filing date of U.S. Patent No. 6,702,944 (the '944 patent) and U.S. Provisional Patent Application No. 60/216,668 to which the '944 patent claims priority, that was cited by the examiner. The persons making the declaration are the inventors.

Appl. No. 09/909,488
Declaration

Attorney Docket No. 33449.8029.US00
Patent

2. Attached as Exhibit A, created prior to July 7, 2000, is a redacted document entitled "Stage-Gate One" describing the elements of the claims in the above-referenced application.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Title 18, United States Code, § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Dated: Aug 13, 2007

Harapanahalli S. Muralidhara
Harapanahalli S. Muralidhara

Dated: _____

Robert Sung Lee
Robert Sung Lee

Dated: _____

Martin N. Aschauer
Martin N. Aschauer


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Dated: _____

Harapanahalli S. Muralidhara

Dated: 8/10/2007



Robert Sung Lee

Dated: _____

Martin N. Aschauer

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Dated: _____

Harapanahalli S. Muralidhara

Dated: _____

Robert Sung Lee

Dated: 8/10/07

Martin N. Aschauer

Stage-Gate One

1. Provide project description and hypothesis.
2. Does the project fit corporate or business strategy?

[REDACTED]

3. Does the project provide customer solutions?
4. Show the great need customer has for the product or process

It provides customer solutions by addressing environmental and community concerns about traditional water softeners, while increasing convenience to the customer. Brine discharges are creating increased salinity levels in the ground water, which is creating increased environmental concerns. Also, new legislation has created stricter water quality standards. Standards on softener efficiency have also steadily increased. The use of membranes to soften hard water would eliminate the need these issues by eliminating need to regenerate an ion exchange column.

Another added benefit to "membrane softening" is the elimination of purchasing / carrying a 40 lb bag of salt. As the "baby boomer" generation ages toward retirement, this may be a benefit that will be worth a premium.

Preliminary research has revealed an existing market for residential RO water softening units but issues such as high water rejection, high operating pressures, and excessive separation has limited it's effectiveness to replace the residential water softener.

As membrane technology continues to advance, areas such as low pressure reverse osmosis (LPRO), "loose RO", NF or "membrane softeners", and membrane electrodialysis will play a stronger role in water softening. These membranes are more selective and can be designed to target water-hardening ions and reduce pressure and water rejection rates.

5. Describe any IP, regulatory, or environmental barriers

There is a lack in IP for membrane technology and how it relates to water softening in Cargill, Incorporated. For the project to be successful, regulations of water quality and water softening has to be met and other performances key to traditional water softeners must be matched (\$). Some possible environmental barriers may exist for issues with fouling and biofouling.

[REDACTED]

[REDACTED]

8. Resources Required

R&D, engineering, production, and business development skills

We have OR can subcontract outside resources to meet demand of project?

How much will it cost us to bring new product or process to market?

Timeline and game plan for speeding product or process to market.

[REDACTED]